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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,918	03/26/2004	Nan-Hsiung Hung	67,200-1191	9416

7590 01/18/2007

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EXAMINER	
DRODGE, JOSEPH W	
ART UNIT	PAPER NUMBER
1723	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/810,918	HUNG ET AL.	
	Examiner	Art Unit	
	Joseph W. Drodge	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,3,5,7,9,11 and 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Mukhopadhyay patent 5,925,255 described hereafter as the M patent or M. For independent apparatus claims 1 and 9, M discloses mixed bed ion exchange units 12,44,46 etc. ***that remove both positive and negative (anionic and cationic) ions from the wastewate***r, base dosing system 13,22,24 for raising water pH followed by a "high efficiency" reverse osmosis system 30,34 (see figure 9 and other figures). As applied to the claims as amended, ***specifically, base dosing "system" 13 raises the pH of raw water 10 in a first step, then a system that encompasses reverse osmosis unit 30, etc. and also basic material-adding components 22,24 that again or further raises the pH of the water in a second step. If necessary, figures 10 and 11*** illustrate the water being treated being continuously recycled between the pH raising steps, RO units and ion exchange units by way of conduits 100 and 104***, thus maintaining fluid communication*** between the different components of the water purification system.

For claims 3, 7 and 11, the ion exchange unit may comprise tank and resin bed within (column 12, lines 54-55). For claim 5, there are two or more filter membrane units in series or stages (column 22, lines 9-14 and 30-37). For claim 9, there may be 4

or more membrane units in series (column 22, lines 8-14). As necessary, claim terminology "in fluid communication" may mean either upstream or downstream.

For method claims 15-20, the pH may be raised in a first step to a neutral pH of about 7 to optimize removal of silica and other ions and later raised in a second step to a highly alkaline pH of at least 8.5 to 10 in membrane purification steps (see especially column 28, lines 13-65 and column 22, lines 14-17 and lines 23-26).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2,4,6,8,10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Mukhopadyay (the M patent) in view of Jangbarwala et al patent 5,951,874, described hereafter as J or the J patent. These claims differ from the M patent in requiring the base dosing system to comprise tank having the solution and a dispensing conduit whereas M merely discloses source of base solution and conduit. The J patent teaches to store base in a tank prior to adding to water being treated (see tank 10, etc). It would have been obvious to have utilized a tank for storing the base being added as in J in the M system, in order to provide a larger, more reliable source of base as needed by flow volume demands.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mukhopadyay (the M patent) in view of Walter patent 3,143,581, hereafter W or the W patent. Claim 13 differs from M in requiring inlet nozzles and outlet nozzles for distributing wastewater into and out of the ion exchange resin bed. W teaches such nozzles for an ion exchange unit at figure 1 as items 5 and 6 and at column 1, lines 20-23 and 31-39 with column 2, line 69-column 3, lines 15. It would have been further obvious to have utilized the distributing nozzles of J in the M system, in order to efficiently utilize the entire volume of the M resin bed for contacting the wastewater.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mukhopadhyay in view of Walter as applied to claim 13 above, and further in view of Jangbarwala et al. This claim further differs from the M patent in requiring the base

dosing system to comprise tank having the solution and a dispensing conduit whereas M merely discloses source of base solution and conduit. The J patent teaches to store base in a tank prior to adding to water being treated (see tank 10, etc). It would have been obvious to have utilized a tank for storing the base being added as in J in the M system, in order to provide a larger, more reliable source of base as needed by flow volume demands.

Applicant's arguments filed on 06 December 2006 have been fully considered but they are not persuasive. The arguments imply that Mukhopadhyay lacks a two-step pH increase configuration. It is submitted that the reference explicitly discloses such steps 13 and 22/24. Claim language is broad enough to allow intervening structure or process steps between the two steps or stages.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

January 12, 2007

JOSEPH DRODGE
PRIMARY EXAMINER